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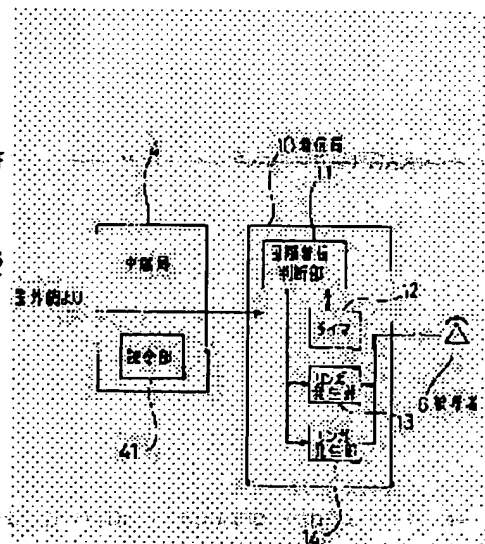
OSHIMA NAOKI

## (54) INCOMING CALL CONNECTION CONTROL SYSTEM

(57)Abstract:

✓ PURPOSE: To provide a system which can perform exact charging to an incoming call subscriber charging call by starting a first ringer generation part in the case of domestic incoming calls, starting a second ringer generation part in the case of international incoming calls and, thereby generating ringer signals.

amendment  
CONSTITUTION: An international incoming call judging part 11 at an incoming station 10 receives call information sent from a repeater station 4 and checks whether the call is international information or not. In the case of domestic information, a first ringer generation part 13 is activated, and a telephone set is rung. In the case of international information for the reception call, a timer 12 is started, a second ringer generation part 14 is activated, and the telephone set is rung. A callee 6 can recognize the international incoming call by the ringing tone and can refuse the incoming call by preventing off-hook. When the callee 6 performs off-hook, it is judged as the intention for receiving the incoming call



subscriber charging call, and the judging part 11 informs the repeater station 4 of it. Thus, the repeater station 4 activates a charging part 41 and starts charging.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

[Drawing 1] It is the principle block diagram of this invention.

[Drawing 2] It is configuration block drawing showing one example of this invention.

[Drawing 3] It is drawing showing the call origination of the collect call from outside the country.

[Drawing 4] It is drawing showing the response to a collect call.

[Drawing 5] It is an explanatory view of operation in the arrival-of-the-mail allowance by the accounting station of a local station.

[Drawing 6] It is an explanatory view of operation in the arrival-of-the-mail allowance by the charged station of a local station.

[Drawing 7] It is an explanatory view of operation in the call termination by arrival-of-the-mail refusal.

[Drawing 8] It is an explanatory view of operation in the case of detouring a call by arrival-of-the-mail refusal.

[Drawing 9] It is an explanatory view of operation in the case of detouring a call by arrival-of-the-mail refusal.

**[Description of Notations]**

4 Relay Center

6 Called Party

10 Slave Station

11 International Arrival Decision Section

12 Timer

13 1st Ringer Generating Section

14 2nd Ringer Generating Section

41 Accounting Section

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[Translation done.]

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**DETAILED DESCRIPTION**

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**[Detailed Description of the Invention]**

[0001]

[Industrial Application] This invention relates to the arrival-of-the-mail connection control system which enabled it to perform exact accounting to a terminating subscriber accounting call (international collect call) in more detail about an arrival-of-the-mail connection control system.

[0002]

[Description of the Prior Art] An international arrival subscriber accounting call (for example, collect call) may start from outside the country. Drawing 3 is drawing showing the call origination of the collect call from outside the country. The calling party 1 should make the collect call from outside the country. This collect call goes into a domestic switched network through a master station 2 and a relay center 3. In a national network, it goes into a relay center 4 and is notified to a slave station 5 from this relay center 4. A slave station 5 connects a collect call to the corresponding called party 6.

[0003] Here, it should carry out off-hook, without a called party understanding anything, as shown in drawing 4. This response is returned to a relay center 4 from a slave station 5, and a relay center 4 starts accounting. Thus, conventionally, in a system, although there is no volition which receives an international collect call in a called party 6, accounting may be started by the called party 6. Moreover, without the volition of arrival-of-the-mail refusal getting across to the operator of the exchange well (problem on language etc.), a call may be set up and accounting may be started.

[0004] In order to solve such nonconformity, various approaches as shown below are taken. Drawing 5 is an explanatory view of operation in arrival-of-the-mail allowance of a local station in an accounting office. When the called party 6 permits arrival of the mail, call origination occurs from a calling party 1, and if a called party 6 does off-hook and answers to this, the accounting station 7 will start accounting from the event. Such a charging system is the case of a domestic station.

[0005] Drawing 6 is an explanatory view of operation in arrival-of-the-mail allowance of a local station in a charged office. The same thing as drawing 3 attaches and shows the same sign. In a slave station 5, the flag which judges arrival-of-the-mail allowance or arrival-of-the-mail refusal for every subscriber is formed, and this flag is managed. When it judges [ whether when a local station is not an accounting station, if a slave station 5 is discriminated from "the call charged at a called party side" with the telephone number, the called party 6 permits the arrival of a call, and ] with said flag and arrival of the mail is permitted, a called party 6 is called. Then, when a called party 6 answers, a reply signal is returned to a relay center 4. The relay center 4 which received the reply signal starts accounting of a call.

[0006] Drawing 7 is an explanatory view of operation in the call termination by arrival-of-the-mail refusal. A slave station 5 sends out the announcement or tone which notifies that without calling a called party 6, when the called party 6 has refused arrival of the mail with reference to a flag, and it terminates a call.

[0007] Drawing 8 is an explanatory view of operation in the case of detouring a call by arrival-of-the-mail refusal. In the system shown in drawing, the operator station 8 for detouring a call in arrival-of-the-

mail refusal is formed. 9 is the operator of exclusive duty in this operator station 8. A slave station 5 makes the operator station 8 bypass a call without calling a called party 6, if it recognizes that the called party 6 has refused arrival of the mail with the flag.

[0008] Drawing 9 is an explanatory view of operation at this time. An operator 9 calls a called party 6 anew based on a called party's 6 telephone number transmitted from a slave station 5. Depending on the conditions of a slave station 5, a called party's 6 telephone number may be unable to be transmitted automatically. In this case, a called party's 6 telephone number is checked from a calling party 1.

[0009] When calling a called party 6, an operator 9 changes the identifier of a call into general call \*\* from till then arrival-of-the-mail accounting call \*\*, and calls a slave station 5. In a slave station 5, it is regarded as a general called party call, and a called party 6 is called. The identifier of a call is changeable into arbitration with actuation of an operator 8. Moreover, accounting of a call is not carried out in the meantime. Accounting initiation is started by actuation of an operator 8.

[0010]

[Problem(s) to be Solved by the Invention] By the conventional method mentioned above, when a called party did not clarify arrival-of-the-mail refusal beforehand, there was nonconformity that arrival-of-the-mail accounting was carried out. Moreover, in order to confirm whether a called party has the volition of arrival of the mail, the operator station of dedication needed to be prepared.

[0011] This invention is made in view of such a technical problem, and it aims at offering the arrival-of-the-mail connection control system which enabled it to perform exact accounting to a terminating subscriber accounting call (international collect call).

[0012]

[Means for Solving the Problem] Drawing 1 is the principle block diagram of this invention. The same thing as drawing 3 attaches and shows the same sign. Drawing constitutes the exchange system to which the relay center 4, the slave station 10, and the called party 6 were connected. The foreign network is connected to the relay center 4. In a relay center 4, 41 is the accounting section charged by the command from a slave station 10. In a slave station 10, the 1st ringer generating section which generates a ringing signal when the timer by which the international arrival decision section which judges whether 11 is the international arrival from arrival-of-the-mail information, and 12 are started after this international arrival decision section 11 receives arrival of the mail, and 13 are domestic arrival, and 13 are the 2nd ringer generating section which generates a ringing signal, when it is international arrival. The 1st ringer generating section 13 and the 2nd ringer generating section 14 need to be what the singing sound can distinguish clearly.

[0013]

[Function] The international arrival decision section 11 confirms whether the call is international information in response to the call origination information sent from a relay center 4. When it is domestic information, the 1st ringer generating section 13 is started and singing of the telephone is carried out. When a receiving call is international information, while starting said timer 12, the 2nd ringer generating section 14 is started. Consequently, singing of the telephone is carried out by the ringing signal from the 2nd ringer generating section 14.

[0014] A called party 6 does not do off-hook, when that it is international arrival understands and carries out arrival-of-the-mail refusal with this singing sound. Consequently, a timer 12 overflows. If overflow of this timer 12 is received, the international arrival decision section 11 will judge that it is arrival-of-the-mail refusal, and will be notified to a relay center 4. Therefore, the accounting section 41 is not started in this case.

[0015] On the other hand, when a called party 6 does off-hook to the singing sound of the 2nd ringer generating section 14, it judges with it being the volition which receives the collect call to international arrival, and the international arrival decision section 11 notifies that to a relay center 4. If this advice is received, a relay center 4 will start the accounting section 41, and will start accounting. Thus, according to this invention, exact accounting can be performed to a terminating subscriber accounting call (international collect call).

[0016]

[Example] Hereafter, the example of this invention is explained to a detail with reference to a drawing.

Drawing 2 is configuration block drawing showing one example of this invention. The same thing as drawing 1 and drawing 8 attaches and shows the same sign. In drawing, 15 is a flag which the international arrival prepared in the slave station 10 wears, and refuses a subscriber accounting call. The called party 6 sets this flag 15 to "1" beforehand, when refusing an international collect call. By a diagram, although only one flag is shown, only the number of called parties (subscriber) connected to a slave station 10 shall be formed. Thus, it will be as follows if actuation of the constituted system is explained.

[0017] When the information received in the slave station 10 is domestic information, the international arrival decision section 11 starts the 1st ringer generating section 13, and carries out ringing of the telephone. If a called party 6 recognizes it as it being domestic arrival from the ringing sound of telephone, off-hook [ of the telephone ] will be carried out and he will answer. This response is notified to a relay center 4 from a slave station 10, the accounting section 41 is started, and accounting is started.

[0018] Next, the calling party 1 should do call origination of an international collect call from outside the country. This call origination goes into a national network through a master station 2 and a relay center 3. In a national network, a relay center 4 receives this international collect call. A relay center 4 notifies this international collect call to a slave station 10.

[0019] In a slave station 10 side, it judges whether the call origination information which the international arrival decision section 11 received is an international collect call. When it is an international collect call, while starting a timer 12, ringing of the 2nd ringer 14 for notifying international arrival is started and carried out. If a called party 6 recognizes it as it being an international collect call from the ringing sound of telephone, he will not do off-hook.

[0020] If the condition of not carrying out off-hook continues during a fixed period, a timer 12 will be overflowed before long. If overflow of this timer is received, a called party 6 will judge it as what has refused the international collect call, and will notify the international arrival decision section 11 to a relay center 4. A relay center 4 notifies a calling party 1 of the advice of a purport by which the international collect call is refused via the foreign network, and cuts a call. In the meantime, the accounting section 41 does not operate.

[0021] The volition which refuses a called party's 6 international arrival can also be set as the flag 15 beforehand formed in the slave station 10. That is, when a called party 6 refuses an international collect call, this flag 15 is set to "1." When international arrival arrives, the international arrival decision section 11 goes to see this flag 15. If "1" stands, the international arrival decision section 11 will notify that to a relay center 4, without connecting with a called party 6. A relay center 4 notifies a calling party 1 of the advice of a purport by which the international collect call is refused via the foreign network like the above-mentioned example, and cuts a call. In the meantime, the accounting section 41 does not operate.

[0022] Moreover, when international arrival is refused, that is not notified to a relay center 4, but the operator office 8 can be detoured. An operator 9 calls a called party 6 anew based on a called party's 6 telephone number transmitted from a slave station 10. Depending on the conditions of a slave station 10, a called party's 6 telephone number may be unable to be transmitted automatically. In this case, a called party's 6 telephone number is checked from a calling party 1.

[0023] When calling a called party 6, an operator 9 changes the identifier of a call into general call \*\* from till then arrival-of-the-mail accounting call \*\*, and calls a slave station 10. In a slave station 10, it is regarded as a general called party call, and a called party 6 is called. The identifier of a call is changeable into arbitration with actuation of an operator 8. Moreover, accounting of a call is not carried out in the meantime. And an operator 9 telephones to a called party 6, and checks eventually whether there is any volition which receives this international arrival. When there is volition to receive, this international call is connected to a called party 6, and that is notified to a relay center 4. A relay center 4 starts the accounting section 41, and starts accounting. Thus, accounting initiation is started by actuation of an operator 8.

[0024] Moreover, the volition which refuses a called party's 6 international collect call can be checked even if as follows. That is, a called party 6 is notified of an international incoming call, and a called

party 6 is made to do off-hook. However, it is made not to regard it as a called party's 6 response the way things stand. It checks whether there is any volition which a called party 6 answers truly by pushing attached \*\*\*\*\* on telephone.

[0025] The international arrival decision section 11 will connect a formal call, if the volition from this called party 6 is checked with the signal from \*\*\*\*\*. Call connection is notified to it and coincidence in a relay center 4, and the accounting section 41 is started in a relay center 4. Even if it carries out off-hook [ of the telephone ], unless a called party 6 pushes \*\*\*\*\* , it is not regarded as arrival-of-the-mail allowance. That is, it is made to perform processing actuation to arrival-of-the-mail refusal which was mentioned above in this case.

[0026] In the example mentioned above, although the case of an in camming (Incoming) collect call was taken for the example, this invention cannot be restricted to this and can be applied to various kinds of services charged at the same called party.

[0027]

[Effect of the Invention] As mentioned above, as explained to the detail, according to this invention, the arrival-of-the-mail connection control system which enabled it to perform exact accounting to a terminating subscriber accounting call (international collect call) can be offered.

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[Translation done.]